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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,200	10/02/2003	Akira Fukumoto	10873.1303US01	2135

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EXAMINER	
ROCCHEGIANI, RENZO	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/678,200	FUKUMOTO, AKIRA	
	Examiner	Art Unit	
	Renzo N. Rocchegiani	2825	AU

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/12/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4-5, 10-11, 13, 15-16 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,627,549 B2 (Juengling).

Juengling discloses a semiconductor device and method to form the same wherein the device comprises conductive film wirings or patterns with protrusions formed at the corners and end part of the wiring or patterns wherein the protrusions face a clearance. (See Fig. 16) The protrusions protrude outward from the corner. (Fig. 16) The conductive films form T-shaped grooves wherein the protrusions are formed at the corners of the conductive films forming the T-shaped grooves. (Fig. 12) Some of the conductive wirings are formed parallel to each other and comprise protrusions at the end thereof and protrusions that extend toward each other. (Fig. 15 and 16) Furthermore, Juengling discloses the formation of a dielectric material on and between the conductive film patterns and wirings. (item 16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,627,549 B2 (Juengling) in view of U.S. Patent No. 5,846,874 (Hartranft et al.).

As stated in paragraph 2, all the limitations of these claims have been met except for teaching that some protrusions bridge inward corner portions.

Hartranft et al. teach that in an integrated circuit layout, the inner corners may be bridged with a protrusion. (Fig. 6).

It would have been obvious to one with ordinary skill in the specific art to bridge a corner with a protrusion, since doing so would prevent shear stress damage to the chip. (See Hartranft et al., col. 1, lines 62-67).

5. Claims 6-8 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,627,549 B2 (Juengling) in view of U.S. Patent No. 6,653,717 B2 (Jain et al.).

As stated in paragraph 2, all the limitations of the claims have been met except for teaching that there are provided bonding pads also coated with dielectric material wherein the bonding pads are formed with the same film that constitutes the conductive wirings and patterns.

Jain et al. teaches a semiconductor device with conductive wirings and patterns comprising some protrusions (Fig. 11) wherein the contact pads (item 58) are formed of the same film material as the wiring and pattern structures and wherein the contact pads are also covered with dielectric material. (Fig. 12 and 13).

It would have been obvious to one with ordinary skill in the art to form contact pads and to form them with the same films, since both Juengling and Jain et al. teach how to form integrated circuit devices and contact pads are necessary structures for the integrated circuit devices to function.

6. Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,627,549 B2 (Juengling).

As stated in paragraph 2, all the limitations of these claims have been met except for specifying the size of the protrusions.

While Juengling does not specify the size of the protrusion, it would be obvious to one with ordinary skill in the specific art to arrive at the claimed sizes, since a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,627,549 B2 (Juengling) in view of U.S. Patent No. 6,653,717 B2 (Jain et al.) and in further view of U.S. Patent Application Publication No. 2004/0056351 A1 (Wu et al.).

As stated in paragraph 2, all the limitations of this claim have been met except for

teaching that there are provided bonding pads also coated with dielectric material wherein the contacts to the bonding pads are formed by patterning a photosensitive resin film on the insulating film and using the patterned photosensitive film as a mask to pattern the insulating film.

Jain et al. teaches a semiconductor device with conductive wirings and patterns comprising some protrusions (Fig. 11) wherein the contact pads (item 58) are formed of the same film material as the wiring and pattern structures and wherein the contact pads are also covered with dielectric material. (Fig. 12 and 13).

Wu et al. teaches the formation of a semiconductor device wherein patterns through a dielectric layer to form contacts are created by by patterning a photosensitive resin film on the insulating film and using the patterned photosensitive film as a mask to pattern the insulating film. ([0033]).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Wu et al. to those of Juengling and Jain et al., since both Juengling and Jain et al. teach how to form integrated circuit devices and contact pads are necessary structures for the integrated circuit devices to function, and since Wu et al. accomplishes the formation of the contact by teaching that either a photosensitive resin mask or a photoresist mask may be used. ([0033]).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo Rocchegiani whose telephone number is (571)

272-1904. The examiner can normally be reached on Monday through Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached at (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

RNR

April 1, 2004

MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800